United States Of America

Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Number SA3571SW

This Certificate issued to Aero Safe Corporation,
a Texas Corporation
5300B Airport Road
Mineral Wells Municipal
Mineral Wells, TX 76067

certifies that the change in the type design for the following product with the limitations and conditions thereof as specified hereon meets the airworthiness requirements of Part 23 *of the* Federal Aviation Regulations.

Original Product Type Certificate Number: A18CE

Make: Bellanca

Model: 17-30A; 17-31A

Description of Type Design Change:
Installation of electrically driven standby vacuum pump in accordance with Aero Safe Corporation Drawing List 820500 dated November 15, 1983, or later FAA approved revision.

Limitations and Conditions:
The installer must determine whether this design change is compatible with previously approved modifications. If the holder agrees to permit another person to use this certificate to alter a product, the holder must give the other person written evidence of that permission.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: December 23, 1983

Date reissued: 04/17/00; 04/06/07

Date of issuance: February 4, 1986

Date amended: 12/11/00 Revision 1

By direction of the Administrator

for Doug A Shaw
(Signature)
S. Frances Cox, Manager
Special Certification Office,
Southwest Region

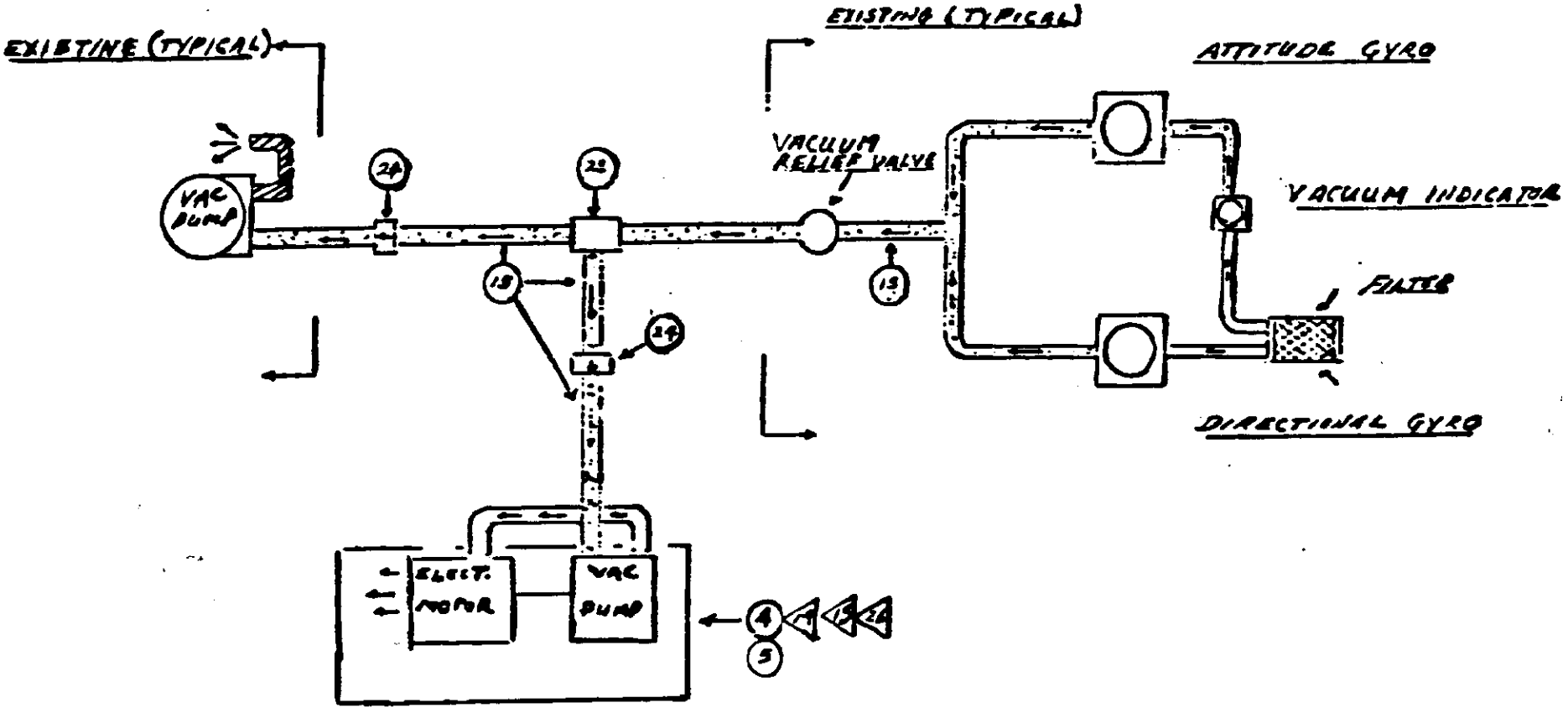
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

1	29	820218	PLACARD ON-OFF	GRAVOPLY HERMES PLASTICS
	--			
A/R	26	QS100-M10H	CLAMP, HOSE	
1	25	1K14-10-10-10	TEE	
2	24	1H37-1	VALVE, CHECK	
1	23	MS535058-22	SWITCH, TOGGLE	
A/R	22	MS21104-14	CLAMP, SUPPORT	
1	21	MS21104-11	CLAMP, SUPPORT	
6	20	MS21042-L3	NUT	
	19			
12	18	AN 960-10	WASHER	
A/R	17	AN737TW34	CLAMP, HOSE	
6	16	AN 3-6A	BOLT	
A/R	15	MIL-H-5593-10	HOSE	MIL. SPEC. MIL-H-5593
A/R	14	307010/307020	FUSE	LITTLE FUSE
1	13	155020	FUSE HOLDER	LITTLE FUSE
	12			
	11			
	10			
	--			
	6			
	5	820402-2	PUMP/MOTOR/PLATE	28 VOLT
1	4	820402-1	PUMP/MOTOR/PLATE	14 VOLT
	3			
	2			
	1			
REQ.# ITEM#		PART NUMBER	PART NAME	MATERIAL SPEC.

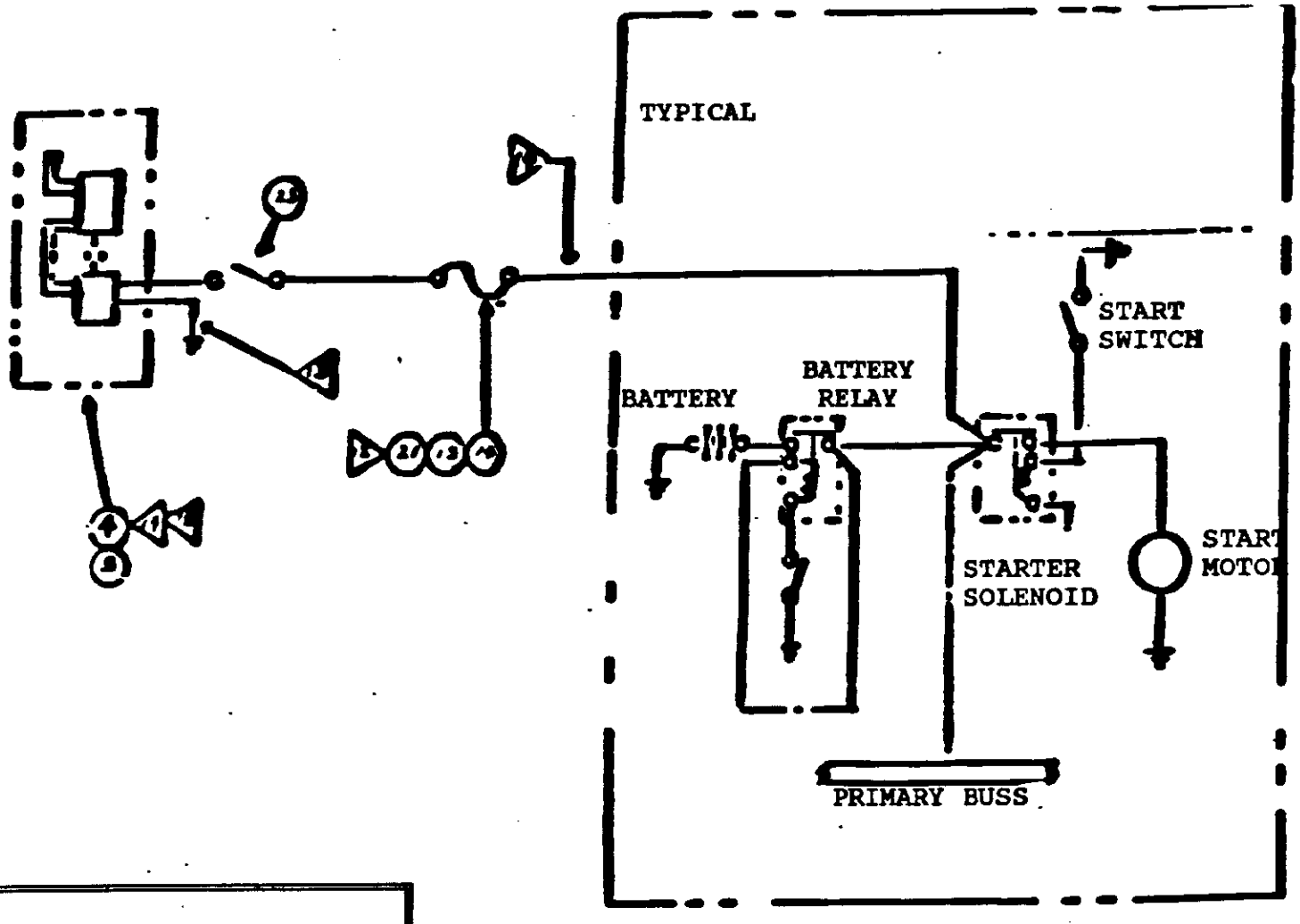
DATE 11-15-83	CHANGE	VACUUM SYSTEM INSTALLATION	DRAWING NUMBER 820501
BY D.SURSELY		AERO SAFE CORPORATION	PAGE: 1 OF 8



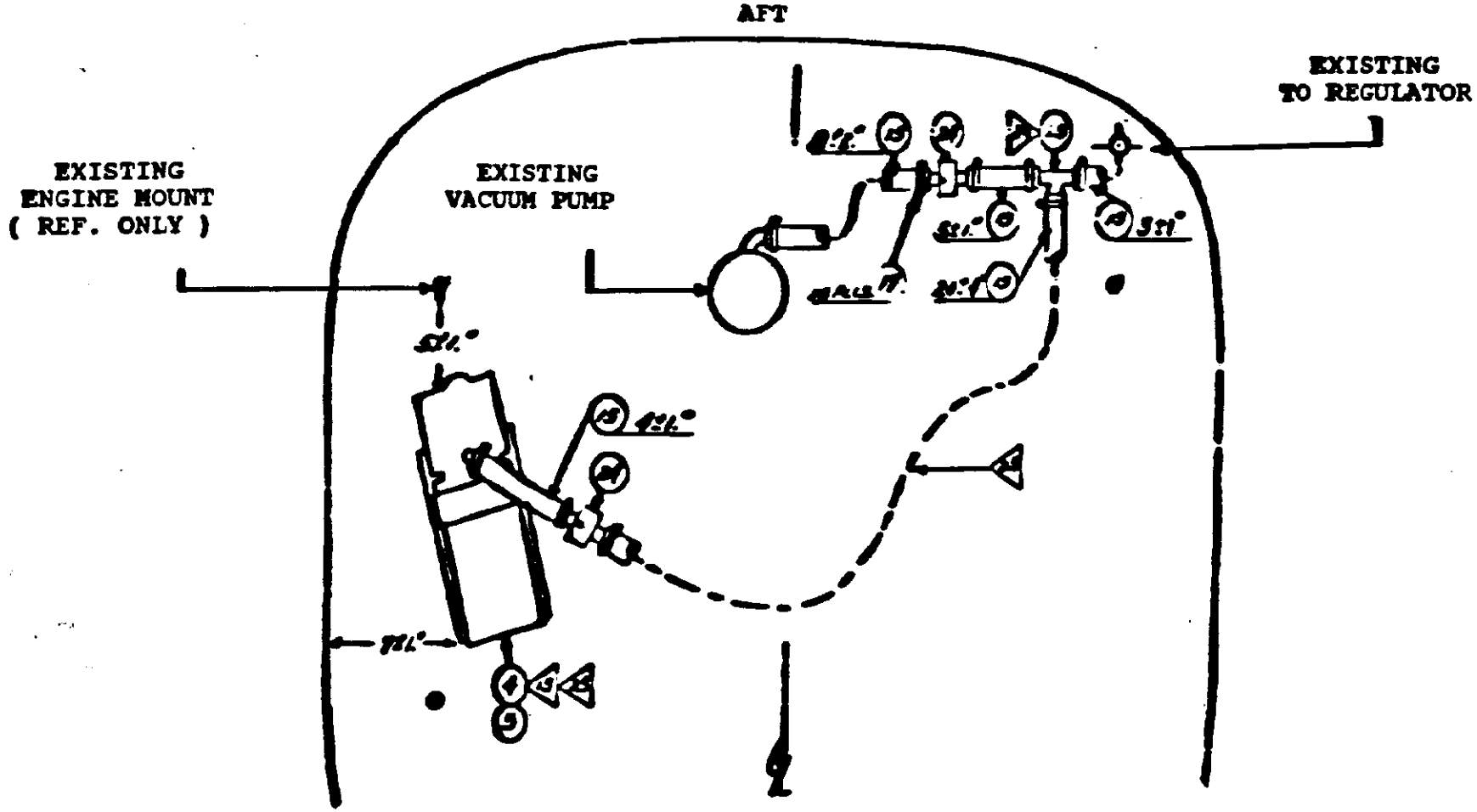
CODE

- INLET AIR
- VACUUM
- DISCHARGE AIR

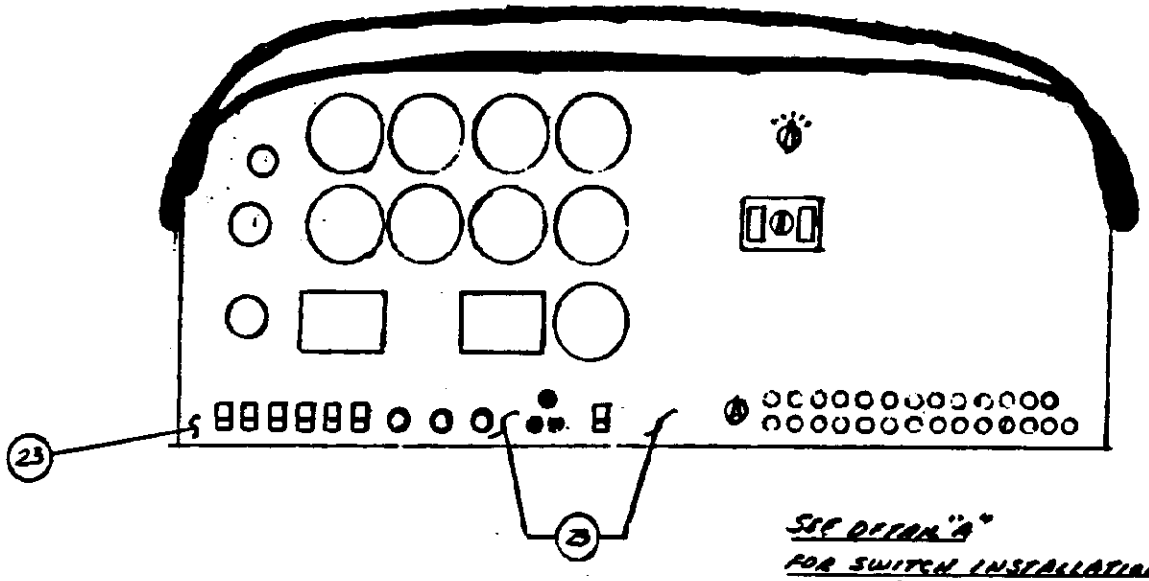
VACUUM SYSTEM SCHEMATIC		
SCALE: NONE	APPROVED BY:	DRAWN BY: D. SURSELY
DATE: 11-15-83		REVISED
VACUUM SYSTEM INSTALLATION		SHEET 2 OF 3
AERO SAFE		DRAWING NUMBER 820501



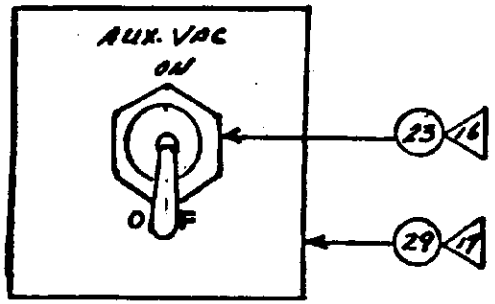
ELECTRICAL SYSTEM SCHEMATIC	
DATE: 11/15/83	DRAWN BY: D. SURSELY
VACUUM SYSTEM INSTALLATION	SHEET 3 OF 8
AERO SAFE CORPORATION	DRAWING NO. 820501



FIREWALL - TYPICAL - LOOKING AFT	
DATE: 11/15/83	DRAWN BY: D. SURSELY
VACUUM SYSTEM INSTALLATION	SHEET 4 OF 8
AERO SAFE CORPORATION	DRAWIHG NO. 820501



SEE DETAIL "A"
FOR SWITCH INSTALLATION
AND LABELING.



DETAIL A

INSTRUMENT PANEL - TYPICAL RELIANCE		
SCALE: NONE	APPROVED BY:	DRAWN BY: D. SURSELY
DATE: 11-25-83		REVISED A 7-18-86
VACUUM SYSTEM INSTALLATION		SHEET 5 of 8
AERO SAFE		DRAWING NUMBER 820501

4 X 11 PRINTED ON NO. 1000H CLEARPRINT

NOTE:

UNLESS OTHER WISE INDICATED:

1. DO NOT SCALE THIS DRAWING FOR DIMENSIONS.

2. BREAK ALL SHARP EDGES .003-.015 AND REMOVE ALL BURRS AND SLIVERS.

3. DIMENSIONS ARE IN INCHES AND TOLERANCES AS SHOWN BELOW.

TOLERANCES:	DECIMALS	ANGLES
	.XXX +/- .005	+/- 1/2 IN.
	.XX +/- .03	
	.X +/- .1	

4. BOLT, SCREW, RIVET AND SPACER LENGTHS, AND CLAMP SIZES WITH ( ) OR (XXX) ARE TO BE DETERMINED ON INSTALLATION. MAINTAIN 2D EDGE DISTANCE AND 3D SPACING.

5. MACHINED SURFACES TO BE 63 PER ANSI B46.1-1962.

6. APPLY TWO COATS OF ZINC CHROMATE PRIMER PER FAA ADVISORY CIRCULAR AC43.13-1A, CHAPTER 6, PARAGRAPHS 248 AND 250, TO ALL NEW AND REWORKED METAL SURFACES.

7. INSTALL ALL FASTENERS IN ACCORDANCE WITH STANDARD PRACTICES OF FAA ADVISORY CIRCULAR AC43.13-1A, CHAPTER 2, PARAGRAPH 99F OF SECTION 3 AND CHAPTER 5, PARAGRAPHS 227B, 227E, 230A(1), 230A(2) AND 231A OF SECTION 1.

8. BOLT, SCREW AND RIVET HOLE SIZES SHALL BE THE NEXT NUMBERED OR LETTERED DRILL SIZE LARGER THAN THE FASTENER DIAMETER.

9. DRILLED HOLE TOLERANCES ARE PER AND10387.

10. DRILL HOLES ON INSTALLATION TO MATCH HOLES IN MATING PARTS.

11. ALL WIRE TO BE 12 AWG PER MIL-W-22759/16 OR MIL-W-81044/9. WHEN SHIELDED, IT MUST BE SHIELDED AND JACKETED PER MIL-C-27500. THE JACKET MATERIAL MUST MEET THE FLAMMABILITY REQUIREMENTS OF THE WIRE BEING SHIELDED AND JACKETED. ROUTE WIRE WITH EXISITNG WIRE BUNDLES WHERE POSSIBLE. ALL WIRING FABRICATION MUST BE ACCOMPLISHED IN ACCORDANCE WITH FAA ADVISORY CIRCULAR AC43.13-1A, CHAPTER 11, PARAGRAPHS 445 THRU 452 OF SECTION 2, PARAGRAPHS 482 & 483 OF SECTION 5 AND PARAGRAPHS 514 THRU 519 OF SECTION 7. USE MS35489 GROMMETS, MS21104 CLAMPS, AN743-13 BRACKETS, MS35207 SCREWS (#10), AN3 BOLTS, MS21042 NUTS, AN960 WASHERS, AND NAS43DD3 SPACERS AS REQUIRED TO SECURE THE WIRING. DO NOT ATTACH CLAMPS NOR BRACKETS TO "LIFE LIMITED" PARTS. (CONSULT THE DATA SHEET, MAINTENANCE MANUAL AND FLIGHT MANUAL FOR INFORMATION.) WIRE TERMINALS, SPLICES AND CAPS MUST MEET THE REQUIREMENTS OF MS25036, MS25181 AND MS25274 RESPECTIVELY.

12. SECURE ITEM 13 FUSEHOLDER TO THE FIREWALL USING ITEM 21 CLAMP. PICKUP EXISTING AVAILABLE THREADED FASTENER OR USE ITEM 16 BOLT, ITEM 20 NUT AND ITEM 18 WASHER. CONNECT THE BODY TERMINAL OF THE FUSEHOLDER TO THE STARTER CONTACTOR WITH A 6.0 MAXIMUM WIRE LENGTH.

13. THE ELECTRIC MOTOR WIRE LEAD SELECTED FOR GROUNDING (2RB14 CONNECTOR ATTACHED) MUST CAUSE COUNTERCLOCKWISE ROTATION (AIRBORNE 211CC VACUUM PUMP) OR CLOCKWISE ROTATION (AIRBORNE 212CW/SIGMA TEK 1U128-003 VACUUM PUMP) OR THE ELECTRIC MOTOR SHAFT WHEN LOOKING TOWARD THE SHAFT END OF THE MOTOR. THE GROUND WIRE MUST BE ATTACHED DIRECTLY TO THE AIRPLANE OR A JUMPER WIRE USED TO ASSURE PROPER GOUNDING TO THE AIRPLANE.

14. ELECTRIC SCHEMATIC SHOWN: TYPICAL. FUSED ELECTRICAL TERMINAL SHOULD BE CONNECTED TO POWER SOURCE NEAREST CONTROL SWITCH. (PRIMARY BUS, STARTER SOLENOID, ETC.) SELECTION SHOULD ALLOW FOR CONTINUED ELECTRICAL POWER IN THE EVENT OF LOSS OF GENERATOR.

15. THIS INSTALLATION ADDS AN ELECTRICAL LOAD OF 7.5 AMPS (28 VOLT SYSTEM) 13.5 AMPS (14 VOLT SYSTEM) TO THE ELECTRICAL SYSTEM. THE TOTAL CONTINUOUS CONNECTED LOAD SHALL BE LIMITED TO APPROXIMATELY 80 PERCENT OF THE TOTAL RATED GENERATOR/ALTERNATOR OUTPUT CAPACITY. USE THE PROCEDURE OUTLINED BY AC 43.13 SECTION 2 PARAGRAPHS 424, 425 AND 426 TO ASSURE COMPLIANCE WITH THE 80 PERCENT LIMITATION.

16. INSTALL ITEM 23 SWITCH AND PLACARD ITEM 29 IN AVAILABLE LOCATION WITHIN ARE SHOWN. PROVIDE .06 CLEARANCE WITH OTHER COMPONENTS. (MANUFACTURER'S TYPE SWITCH MAY BE USED IN LIEU OF ITEM 23. LOCATE IN EXISTING SWITCH BANK.)

17. LOCALLY MANUFACTURED LABEL/PLACARD OPTIONAL IN LIEU OF FURNISHED ITEM 29. SIZE AND COLOR OF CHARACTERS TO BE .12 HIGH, BLACK ON WHITE (WHITE ON BLACK) OR SIMILAR TO ADJACENT COMPONENT LABELING. PLACARDS MAY BE MADE FROM GRAVOPLY (WITH PRESSURE SENSITIVE BACKING)BY HERMES PLASTIC COMPANY OR 3-M COMPANY SCOTCHCAL PROCESS. FILL ENGRAVED CHARACTERS WITH LUSTERLESS ENAMEL OR LACQUER.

18. INSTALL ALL SWITCHES AND FUSEHOLDERS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS USING ATTACHING HARDWARE FURNISHED WITH EACH COMPONENT. APPLY ENAMEL AND LACQUER PAINTS AND FABRICATE AND APPLY ALL PLACARDS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

19. APPLY TWO COATS OF ZINC CHROMATE PER NOTE 6 ABOVE TO ALL EXPOSED STEEL AND ALUMINUM SURFACES OF FABRICATED PARTS NOT PREVIOUSLY CADMIUM PLATED NOR ANODIZED, RESPECTIVELY

20. THE OPTIONAL WING AND TAIL DE-ICER BOOTS WHEN INSTALLED, GETS ITS VACUUM SOURCE WITHIN THE EXISTING PORTIONS OF THE SCHEMATIC BUT IS NOT SPECIFICALLY SHOWN IN THIS FIGURE.

21. ROUTE AND LOCATE ADDED HOSE TO PREVENT INTERFERENCE AND CHAFING. USE ITEMS 16, 18, 20 AND 22 AS NEEDED FOR PROPER SEPERATION AND SECURITY.

22. ITEM 17 MAY BE USED IN PLACE OF ITEM 26.

23. MAINTAIN MINIMUM .50 CLEARANCE BETWEEN ASSEMBLY AND ADJACENT STRUCTURE.

24. ITEM 25, TEE FITTING SHOWN ROTATED FOR CLARITY.

25. POSITION OF UNIT AND HOSE LENGTHS SHOWN ARE OPTIMUM CONDITION AND MAY VARY DUE TO MODIFICATIONS AND OPTIONAL EQUIPMENT INSTALLED.

26. THIS SYSTEM CERTIFIED FOR NORMAL CONTINUOUS OPERATION.

REVISIONS		
LETTER	DATE	DESCRIPTIONS
A	7-18-86	DELETE "MAX. ALT. 15,000'" FROM DETAIL A SHEET AND NOTE 23 SHEET 7A. CORRECT NOTE 13 TO REFLECT THE USE OF ALTERNATE VACUUM PUMPS: (A) AIRBORNE MFG. - 212CW AND (B) SIGMA TEK 1U128-003 . . . BOTH ARE ACCEPTABLE SUBSTITUTIONS FOR THE AIRBORNE MFG. 211CC

REVISION EFFECTIVITY

SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		7A		
LETTER					A		A	A											A		

CHANGES: A 7-18-86

DATE: 7-18-86	VACUUM SYSTEM INSTALLATION	PAGE: 8 OF 8
DRAWN BY D. E. ALLISON	AERO SAFE CORPORATION	DRAWING NUMBER 820501

AERO SAFE CORPORATION P.O. BOX 10206 FT. WORTH, TEXAS 76114 ENGINEERING CHANGE ORDER	DRAWING TITLE: AUX. INST. AIR INSTALLATION DRAWING NO: 820501

REASON: ALTERNATIVE CHECKVALVE

ADD NOTE [27] AND FLAG TO ITEM 24 IN PARTS LIST PAGE 1 OF 8.

[27] THE SWEENEY ENGINEERING CORPORATION CHECKVALVE P/N 34-1300-1 IS AN ACCEPTABLE ALTERNATE FOR THE AIRBORNE 1H37-1 CHECKVALUE.

CHANGE:

DATE: 4-19-88	APPROVED BY: D. ALLISON 4-19-88	SHEET 1 OF 1
DRAWN BY D. ALLISON	AERO SAFE CORPORATION	E.C.N. NUMBER 488-1

AERO SAFE CORPORATION P.O. BOX 10206 FT. WORTH, TEXAS 76114 ENGINEERING CHANGE ORDER	DRAWING TITLE: AUX. INT. AIR INSTALLATION DRAWING NO: 820501

REASON: ALTERNATE TEE FITTING

ADD FLAG NOTE [X] AND FLAG TO PART NUMBER 1 K 14 10 10 10 IN PARTS LIST. (NOTE [X] IS NEXT AVAILABLE NOTE NUMBER)

NOTE [X] :

[X] THE AERO SAFE CORPORATION TEE FITTING P/N A/S 1 K 14 10 10 10 IS AN ACCEPTABLE ALTERNATE FOR THE AIRBORNE P/N 1 K 14 10 10 10 TEE FITTING.

DRAWN BY:	DATE:	APPROVED BY:	E.C.N. NO.	SHEET
D. ALLISON	6/05 1995	D. ALLISON	695-2A	1 OF 1

AERO SAFE CORPORATION P.O. BOX 10206 FT. WORTH, TEXAS 76114 ENGINEERING CHANGE ORDER	DRAWING TITLE: AUX. INT. AIR INSTALLATION DRAWING NO: 820403

REASON: ALTERNATE 90 DEGREE ELBOW FITTING

ADD FLAG NOTE [X] AND FLAG TO PART NUMBER 1 K 1 6 10 IN PARTS LIST. (NOTE [X] IS NEXT AVAILABLE NOTE NUMBER)

NOTE [X] :

[X] THE AERO SAFE CORPORATION 90 DEGREE ELBOW FITTING P/N A/S 1 K 1 6 IS AN ACCEPTABLE ALTERNATE FOR THE AIRBORNE 90 DEGREE ELBOW FITTING P/N 1 K 1 6 10

DRAWN BY:	DATE:	APPROVED BY:	E.C.N. NO.	SHEET
D. ALLISON	6/05 1995	D. ALLISON	695-2B	1 OF 1

AERO SAFE CORPORATION P.O. BOX 10206 FT. WORTH, TEXAS 76114 ENGINEERING CHANGE ORDER	DRAWING TITLE: AUX. INT. AIR INSTALLATION DRAWING NO: 820501

REASON: ALTERNATE TEE FITTING

ADD FLAG NOTE [X] AND FLAG TO PART NUMBER 1 K 14 10 10 10 IN PARTS LIST. (NOTE [X] IS NEXT AVAILABLE NOTE NUMBER)

NOTE [X] :

[X] THE AERO SAFE CORPORATION TEE FITTING P/N A/S 1 K 14 10 10 10 IS AN ACCEPTABLE ALTERNATE FOR THE AIRBORNE P/N 1 K 14 10 10 10 TEE FITTING.

DRAWN BY:	DATE:	APPROVED BY:	E.C.N. NO.	SHEET
D. ALLISON	6/05 1995	D. ALLISON	695-2A	1 OF 1

AERO SAFE CORPORATION P.O. BOX 10206 FT. WORTH, TEXAS 76114 ENGINEERING CHANGE ORDER	DRAWING TITLE: AUX. INT. AIR INSTALLATION DRAWING NO: 820403

REASON: ALTERNATE 90 DEGREE ELBOW FITTING

ADD FLAG NOTE [X] AND FLAG TO PART NUMBER 1 K 1 6 10 IN PARTS LIST. (NOTE [X] IS NEXT AVAILABLE NOTE NUMBER)

NOTE [X] :

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DRAWN BY:	DATE:	APPROVED BY:	E.C.N. NO.	SHEET
D. ALLISON	6/05 1995	D. ALLISON	695-2B	1 OF 1